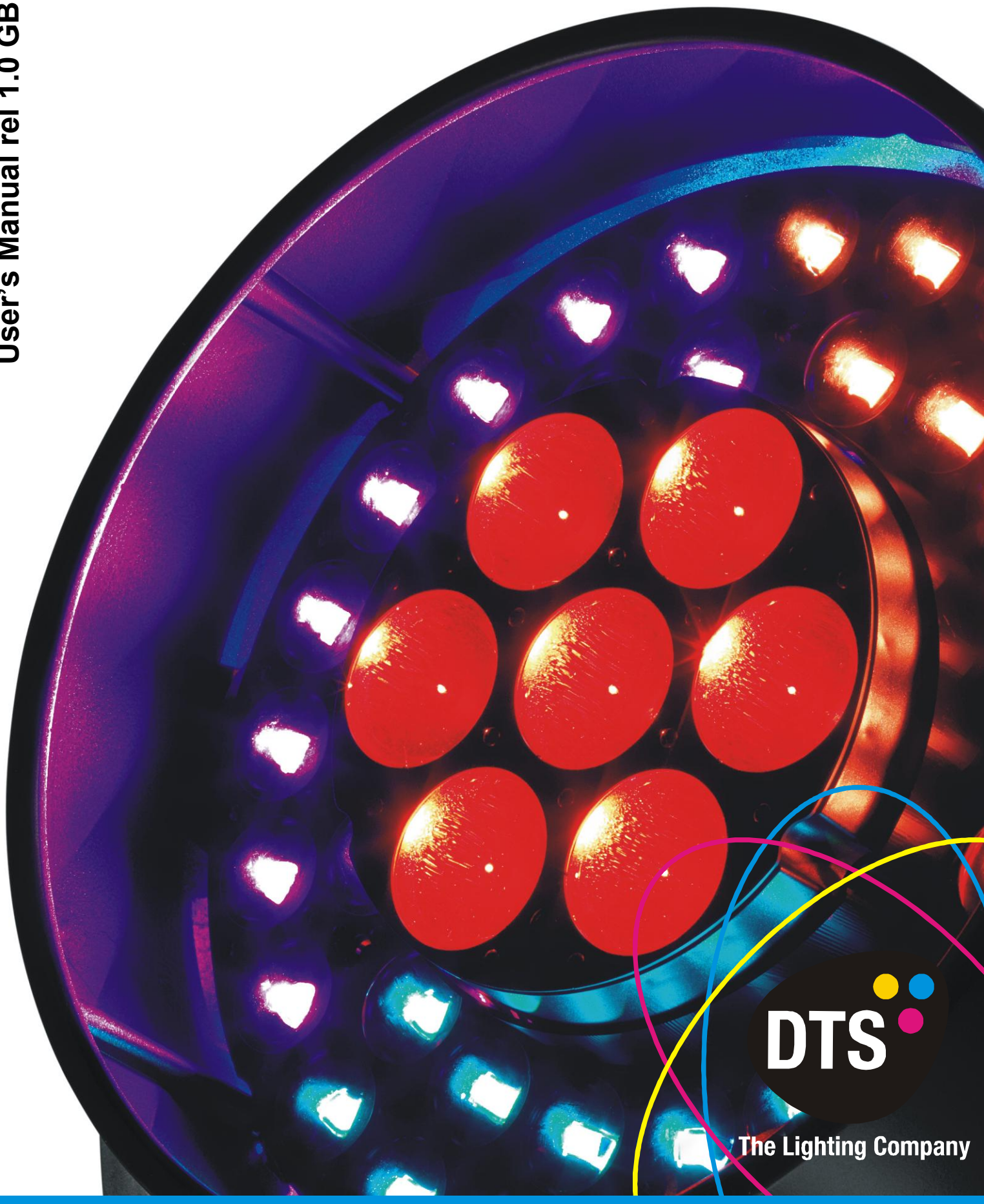
WONDER

User's Manual rel 1.0 GB



DTS

The Lighting Company

Made in Italy

D.T.S. Illuminazione s.r.l.
Via Fagnano Selve 10/12/14
47843 Misano Adriatico (RN) ITALIA Tel +39 0541 611131 Fax +39 0541 611111 info@dts-lighting.it http://www.dts-lighting.it

INDEX:

1- SYMBOLS

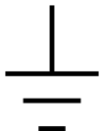
Graphic symbols used on this manual:

THIS SYMBOL INDICATES A HOT SURFACE
Never handle the unit until at least 10 minutes have elapsed since the projector was turned off.

t_c 80°C

THIS SYMBOL INDICATES TEMPERATURE OF THE EXTERNAL SURFACE
The maximum temperature that can be reached on the external surface of the fitting, in a thermally steady state, is 80°C (176°F).

THIS SYMBOL INDICATES THE ELECTRIC SHOCK RISK
High voltage is present inside the unit. Unplug the unit prior to performing any function which involves touching the inside of the moving head.



THIS SYMBOL INDICATES PROTECTION AGAINST ELECTRICAL SHOCK
Connection must be made to a power supply system fitted with efficient earthing (Class I appliance).

THIS SYMBOL INDICATES GENERAL RISK

THIS SYMBOL MEANS YOU CAN PLACE THE UNIT ON NORMALLY FLAMMABLE SURFACES
Suitable for mounting on normally flammable materials surfaces greater than 200°C with some combustion time lag.

THIS SYMBOL MEANS PHOTOBIOLOGICAL SAFETY
Caution: Possibly hazardous optical radiation emitted from this product. Do not stare at operating light source. May be harmful to the eyes.

THIS SYMBOL INDICATES THE MINIMUM DISTANCE FROM ILLUMINATED OBJECTS

LONG-LIFE AUTO-CHARGING BUFFER BATTERY
The projector contains a rechargeable lead-acid or lithium iron tetraphosphate battery. To preserve the environment, please dispose the battery at the end of its life according to the regulation in force.

2- GENERAL WARNING

Read the instruction contained in this user manual carefully, as they give important information regarding safety during installation, use and maintenance.
The device is not for domestic use and must be installed by a qualified electrician or experienced person.
Always disconnect the device from the mains before maintenance.
The device must always be equipped with an efficient ground connection.

3- GENERAL WARRANTY CONDITIONS

The unit is guaranteed for 36 months from the date of purchase against manufacturing material defects.

4- TECHNICAL FEATURES

Overview
WONDER is the first Double-Optics Wash fixture. WONDER is an amazing step forward compared with every other LED Wash on the market. In fact, WONDER's infinite possibilities range from creating the purest most uniform color backgrounds ever seen to projecting eye-catching dynamic multicolor beams.

WONDER introduces a revolutionary architecture: a double concentric optical system. A radically new technology that achieves an unprecedented result: the purest most uniform wall wash ever seen. In traditional wash lights, when the beam is widened to illuminate a larger area, a darker spot is visible in the center.
The revolutionary optics of the WONDER, however, projects two concentric beams with independently controllable luminosity, size and color. It is therefore possible to balance the brightness of the entire beam with that of its center, resulting in unprecedented evenly diffused luminosity. You can also obtain stunning multicolor projections.

The WONDER's LED board consists of two concentric zones: a central one, and a ring divided into three distinct sections. Each of these four areas has individual control of its main features, such as luminosity, colors and effects: it's like having four LED fixtures in one. Furthermore, each zone has its own dedicated optical system, featuring different lenses and zoom ranges. This revolutionary configuration makes endless combinations possible, creating amazing effects in the air.

WONDER FPR
(D.T.S. Product Code: 03.LDR011.FFP)
• Electronic ballast 90-260V 50/60 Hz • FPR (Free Pan Rotation) • Black finish

4- TECHNICAL FEATURES

LED Technology
49 FULL COLOUR LEDs (RGBW)

Optical group
2 concentric independent high efficiency optical groups
Optical group 1: 3.5°- 52° long excursion linear motorized zoom
Optical group 2: 8°- 52° long excursion linear motorized zoom
22,000 Lux / 5 m (maximum luminosity)

Color generation
4 discrete LED areas; each area is independently controllable (luminosity, colors, effects) 16 million colors each
Wide palette of pure uniform whites with variable linear color temperature (2700°K – 8000°K)

Interface / Control / Programming
LCD graphic display + 4 soft-keys (control / management of the main parameters)
Long-life auto-charging buffer battery
RDM
ARTNET available on request
Wireless ready
Updatable internal operating system

DMX
34 (Default) or 38 DMX channels

Pan & Tilt
'FPR' system (D.T.S. patent)
Pan (limitless, in both directions); Tilt (270°)
Tri-phase stepper motor technology for ultra-fast silent movements
Pan 540°: 2.5 sec.; Tilt 270°: 1.5 sec
16-bit resolution
Selectable speed ranges
Pan / Tilt lock

Power supply
Electronic full-range AC 90-260 V 50/60 Hz
Power consumption: 850 W

Connectors
DMX: 4 XLR connectors (3-pole In and Out; 5-pole In and Out) by Neutrik
Power supply: POWERCON IN and OUT (re-launch) connectors by Neutrik

Operating ambient temperature
-10° / 40°

Weight
23.4 Kg

International certifications
Certification CE; LED Class: Class 2 LED product

Dimensions

Packaging Dimensions (LxWxH)

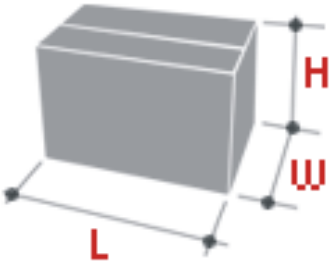
610 x 410 x 695 mm

Weight: 28 Kg

Unit Dimensions (LxWxH)

512x398x571 mm

Weight: 23,4 Kg



5- ACCESSORIES

As standard

* 1 x POWERCON male cable connector (Code 0520P014)
* 1 x XLR 5 Pins male cable connector (Code 0508B066)
* 1 x XLR 5 Pins female cable connector (Code 0508B065)
* 2 x Omega clamp with “Fast Lock” connection 1/4 turn (Code 02K00549)
* User’s manual

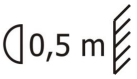
Optional (on request)

• “C” Clamp G100 black / professional (max. load 200Kg) (Code 0521A015)
• Aliscaf Clamp (max. capacity load 100Kg) (Code 0521A008)
• Safety wire (3mm x 60 cm), ring spring catch, max. capacity load 60Kg (Code 0521A010)

6- IMPORTANT SAFETY INFORMATION

6.1 Fire prevention:

-It is permissible to place the unit on normally flammable surfaces.
Suitable for mounting on normally flammable materials surfaces greater than 200°C with some combustion time lag.
-Minimum distance from the closest illuminable surface: 0,5 m.



-Replace any blown or damaged fuses only with those of identical value (10AT). Refer to the wiring diagram if there is any doubt.
-Connect the projector to mains power via a thermal magnetic circuit breaker.
It is, moreover, recommended to protect the supply lines of the projectors from indirect contact and/or shorting to earth by using appropriately sized residual current devices.

6.2 Prevention of electric shock:

-High voltage is present inside the unit.
Unplug the unit prior to performing any function which involves touching the inside of the moving head.
-The level of technology inherent in the WONDER requires the assistance of specialised personnel for all servicing.
Please refer to an authorised D.T.S. service centre.
-Connection must be made to a power supply system fitted with efficient earthing (Class I appliance).

-A good earth connection is essential for proper functioning of the projector.
-Never connect the unit without proper earth connection.
-The fixture should be located in places with a good air ventilation.

6.3 Safety:

-The projector should always be installed with bolts, clamps and other tools that are capable of supporting the weight of the unit.
-Always use a second safety cable to sustain the weight of the unit in case of the failure of the main fixing point.
-The maximum temperature that can be reached on the external surface of the fitting, in a thermally steady state, is 80°C (176°F). t_c 80°C
Never handle the unit until at least 10 minutes have elapsed since the projector was turned off.

-Never install the fixture in an enclosed area lacking sufficient air flow.
The ambient temperature should not exceed 40°C.
-Caution: Possibly hazardous optical radiation emitted from this product.
Do not stare at operating light source. May be harmful to the eyes.

6.4 Level of protection against the penetration of solid and liquid objects:

-The projector is classified as an ordinary appliance and its protection level against the penetration of solid and liquid objects is IP20.

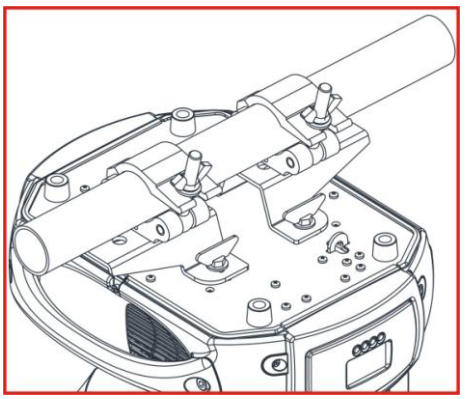
6.5 Long-life auto-charging buffer battery:

-The projector contains a rechargeable lead-acid or lithium iron tetraphosphate battery. To preserve the environment, please dispose the battery at the end of its life according to the regulation in force.

7- VOLTAGE AND FREQUENCY

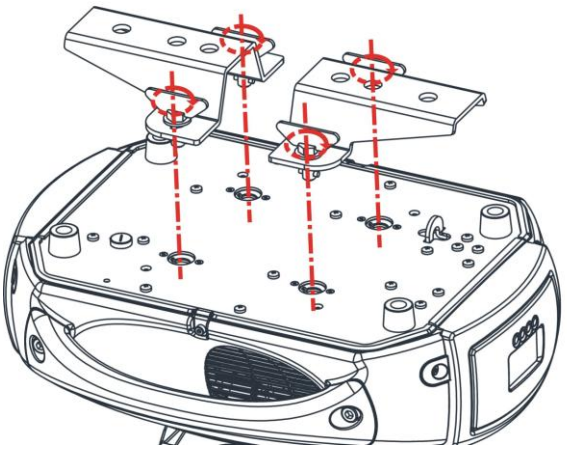
The WONDER with electronic ballast can operate at 90-260V 50 or 60 Hz.

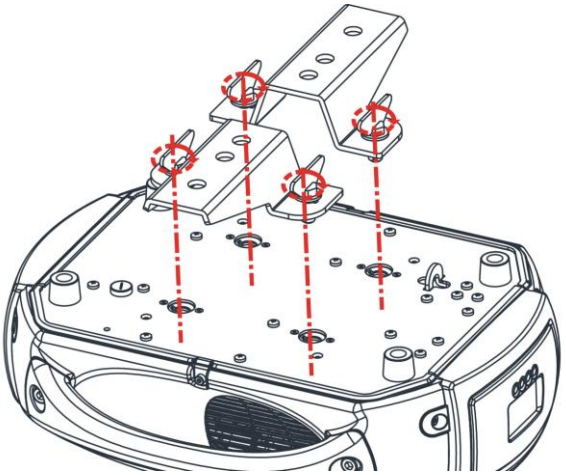
8- INSTALLATION

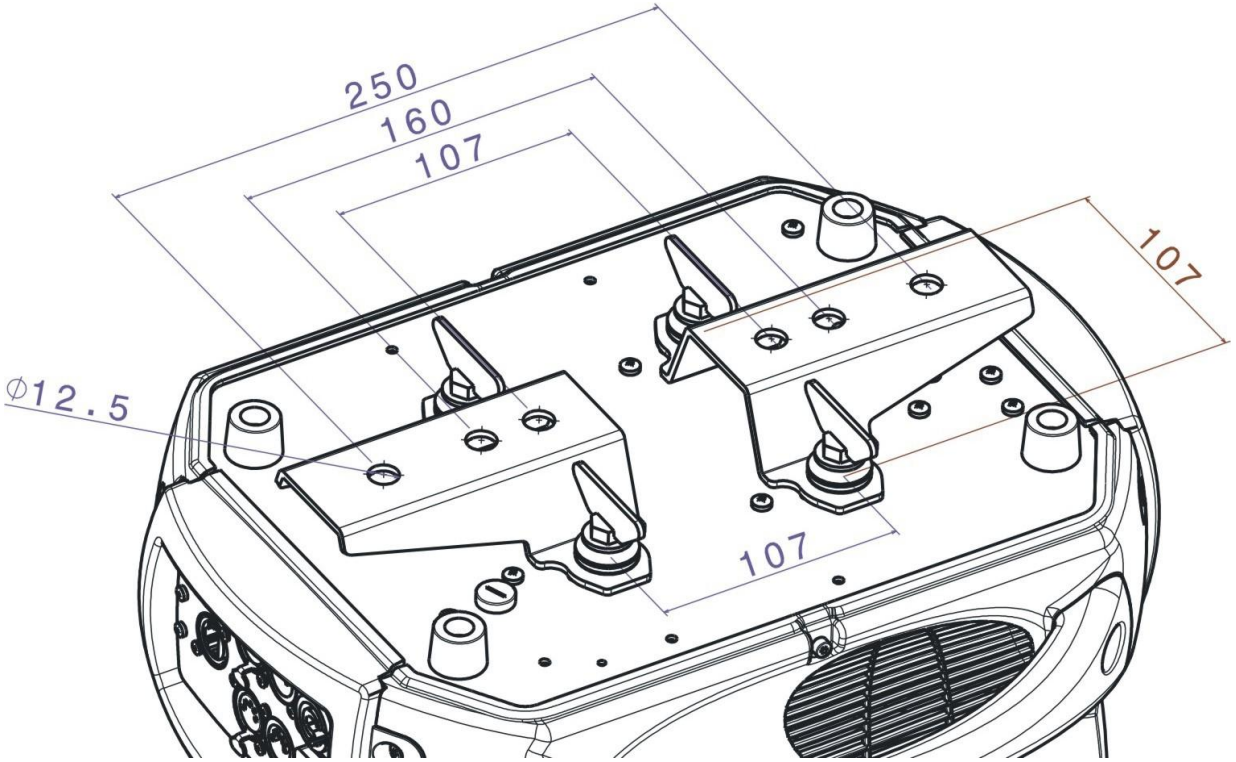


WONDER may be either floor or ceiling mounted. For floor mounting installations, the WONDER is supplied with four rubber mounting feet on the base. For ceiling mounted installations, we reccomend the use of appropriate clamps to fix the unit to the mounting surface.

The supporting structure from which the unit is hung should be capable of bearing the weight of the unit, as should any clamps used to hang it.
The structure should also be sufficiently rigid so as not to move or shake whilst the WONDER is moving.
Four 1/4 turn Fast Locks connections placed in the base of the unit allow to hang the WONDER by using the two omega clamps (provided in the box) in conjunction with fixing clamps for truss (fixing clamps are not included into the unit box).

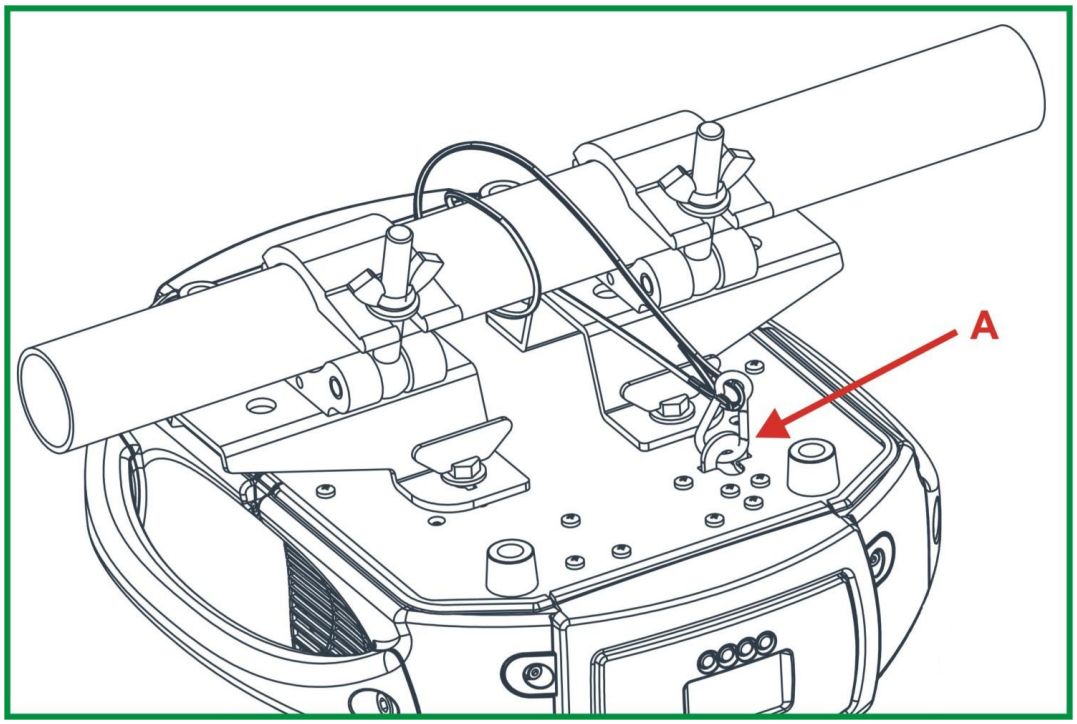






8.1- Safety cable

We recommend the use of a safety cable or chain connected to the WONDER and to the suspension truss in order to avoid the fixture accidentally falling should the main fixing point fail.
Make sure that the iron cable or chain can bear the weight of the entire unit.
You may attach the safety chain/cord to the attachment point (A) located on the base of the fixture, as shown in the picture below.



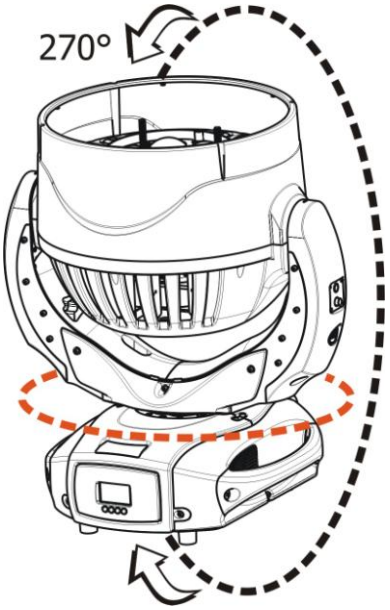
8.2 Protection against liquids

The projector contains electric and electronic components which should under no circumstances come into contact with oil, water or any other liquid.
The proper unit functioning would be compromised should this occur.

8.3- Movement

Unlimited Pan rotation; Tilt 270° (1,5 sec.) .
Do not place any obstructions in the path of the projector's movement.

WARNING
Do not place any object in the path of the projector's movement



Free Pan Rotation ('FPR')
(03.LDR011.FFP)

8.4- Risk of fire

Each fixture produces heat and must be installed in a well-ventilated place.

It is permissible to place the unit on normally flammable surfaces. Suitable for mounting on normally flammable materials surfaces greater than 200°C with some combustion time lag.

Minimum distance from the closest illuminable surface: 0,5 m. LED 0,5 m

8.5- Forced ventilation

You will note, on inspection, that the unit features various air inlets and cooling fans located on both the base and head of the fixture.
These should, under no circumstances, be blocked or obstructed whilst the projector is in operation. Doing so could cause the fixture to seriously overheat thereby compromising its proper operation.

8.6- Ambient temperature

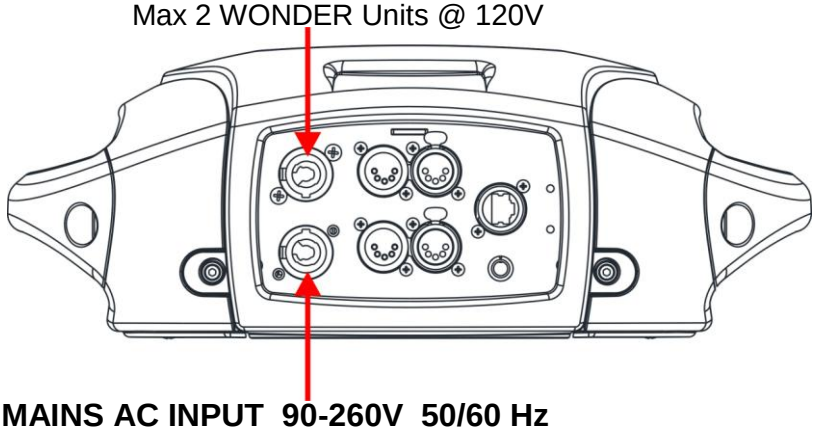
The projector should never be installed in places that lack a constant air flow.
The ambient temperature should NOT exceed 40°C.

9- MAINS CONNECTION

WONDER with electronic ballast operates at 90-260V 50-60 Hz.
Prior to connecting the unit to your mains supply, ensure that the model in your possession correctly matches the mains supply available.
For connection purposes, ensure that your plug is capable of supporting 4 amps at 230 VOLT, or 10 amps at 90 VOLT each unit connected.
Strict adherence to regulatory norms is strongly recommended.

MAINS AC OUTPUT 90-260V 50/60 Hz (16A Max)

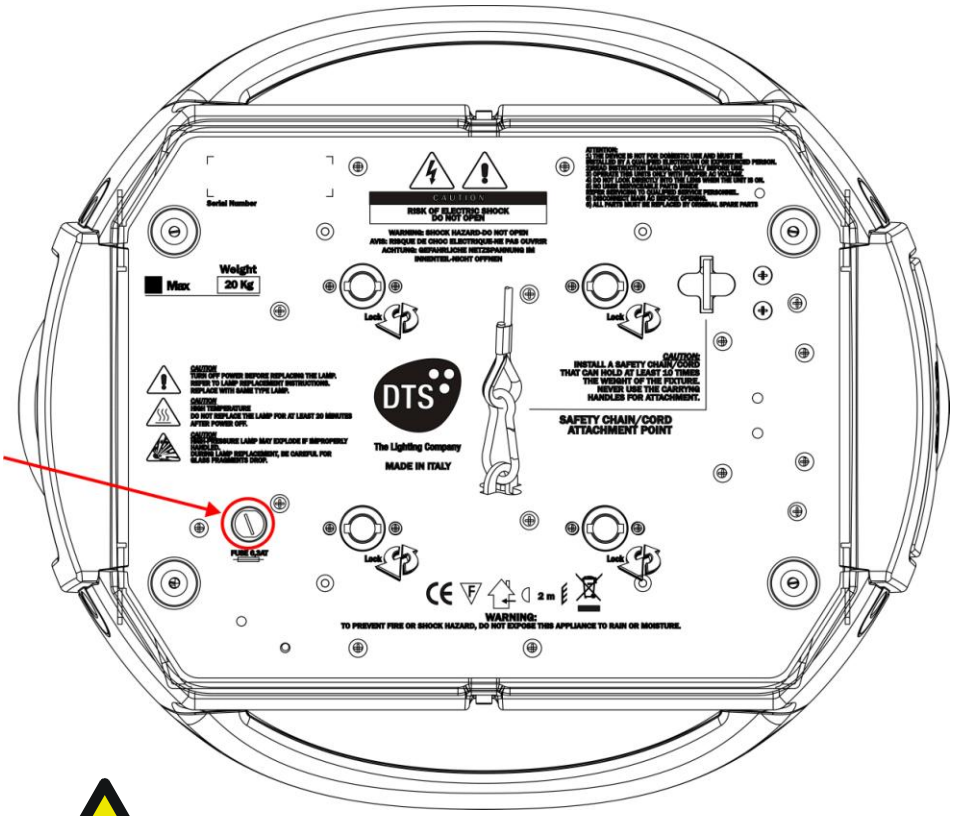
Max 4 WONDER Units @ 230V
Max 2 WONDER Units @ 120V



(03.LDR011.FFP)

MAINS AC INPUT 90-260V 50/60 Hz

FUSE 10A T



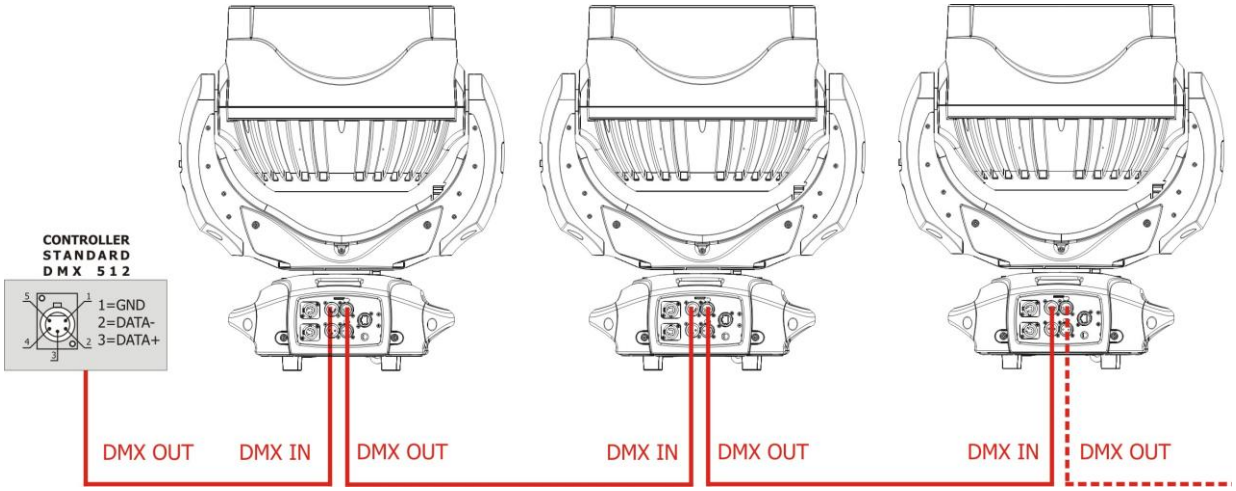
9.1- Protection

The use of a thermal magnetic circuit breaker is recommended for each WONDER.
It is, moreover, recommended to protect the supply lines of the projectors by using Appropriately sized residual current devices.
Connection must be made to a power supply system fitted with efficient earthing (Class I appliance). A good earth connection is essential for the correct operation of the projector.

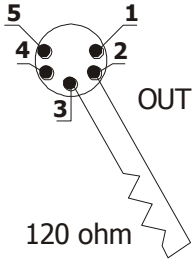
10- DMX SIGNAL CONNECTION

The unit operates using the digital DMX 512 signal.
Connection between the mixer and the projector or between projectors must be carried out using a two pair screened ø 0.5 mm cable and a XLR 5 or 3 pins connector.
Ensure that the conductors do not touch each other.
Do not connect the cable ground to the XLR chassy.
The plug housing must be isolated. Connect the mixer signal to the DMX IN projector plug and connect it to the next projector by connecting the DMX OUT plug on the first projector to the DMX IN plug of the second one.
This way, all the projectors are cascade connected.
NB. If the display showing the DMX address flashes, then one of the following errors has occurred:

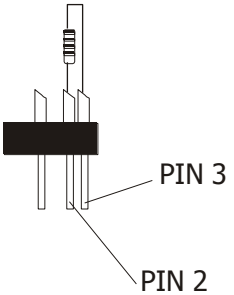
- DMX signal not present
- DMX address not valid
- DMX reception problem



For Installations where long distance DMX cable connections are needed, we suggest to use a DMX terminator.
The DMX terminator is a male XLR 3-5 pins connector with a 120 ohm resistor between pin 2 and 3.
The DMX terminator must be plugged into the last unit (DMX out panel connector) of the DMX line.



PLACE A 120 OHM RESISTOR BETWEEN PIN 2 AND 3 OF A MALE XRL CONNECTOR AND PLUG IT INTO THE DMX OUT PANEL CONNECTOR OF THE LAST UNIT CONNECTED TO THE DMX LINE



10.1-DMX Addresses

MAX can be used in 2 different DMX modes: 34 DMX control channels (Default) or 38 DMX control channels.
Here below is described the DMX channels addressing for the controller when WONDER is set to 34 and 38 DMX control channels:

34 channels mode (Default)

Projector 1	A001	
Projector 2	A035	If you want to select the next projector, just add “34”
Projector 3	A069	
…..	A….	
projector 6	A171	

38 channels mode

Projector 1	A001	
Projector 2	A039	If you want to select the next projector, just add “38”
Projector 3	A077	
…..	A….	
projector 6	A191	

10.2-Selecting the DMX address

1) Press the UP-DOWN key until you reach the required DMX channel. The numbers on the display will start to flash (but the new DMX address hasn't yet been set).
2) Press ENTER to confirm your selection. The numbers on the display will stop flashing and the projector is now setted to the new DMX address.

TRICKS:
If you keep pushed the UP or DOWN keys, the channels are calculated more quickly and you get a faster selection.

11- FIRMWARE UPDATING

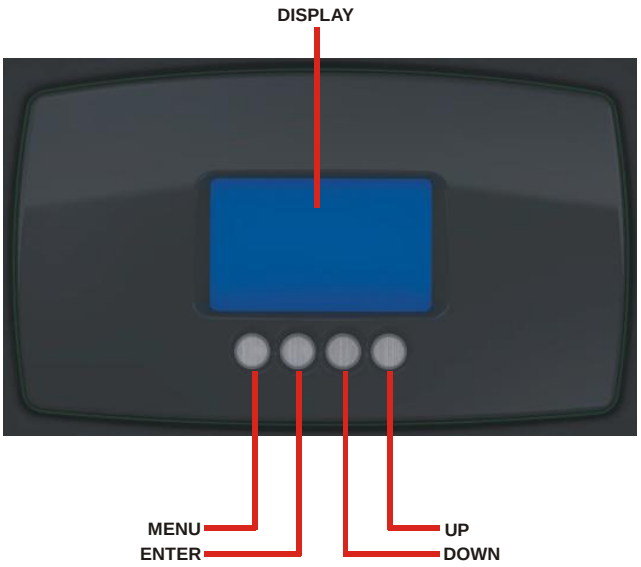
To update the software version of the WONDER you need:

- “D.T.S. Firmware Upgrade Utility” program installed on the PC
- D.T.S. RED BOX interface (D.T.S. Code: 03.LA.008)
- USB-DMX Driver for the D.T.S. RED BOX interface.
- Latest firmware release available for WONDER unit

Updating the software version.
Please follow the procedure below to perform the update:

1. Install the D.T.S. RED BOX USB-DMX driver on the PC you will use to update the unit software.
2. Connect the D.T.S. RED BOX interface to the PC by using a USB cable.
3. Connect the D.T.S. RED BOX interface to the fixture by using a DMX cable.
4. Send the new software version into the unit by using “D.T.S Firmware Upgrade Utility” program.

12- DISPLAY FUNCTIONS



DISPLAY FUNCTIONS

The WONDER display panel shows all the available functions . Using these functions, it is possible to change some of the parameters and add some functions. Changing the D.T.S. setting can vary the functions of the unit so that it does not respond to the DMX 512 used to control it. Carefully follow the instructions below before carrying out any variations or selections.

NOTE: the symbol ☞ shows which key has to be pushed to obtain the desired function.

Software Version: 19-20-22

☞ Menu ☞ Up-Down Pan Direction ☞ ENTER ☞ Up-Down

PAN DIRECTION
This menu allows to set the Pan movement Normal or Reverse

Pan movement Normal or Reverse Default = Normal ☞ ENTER

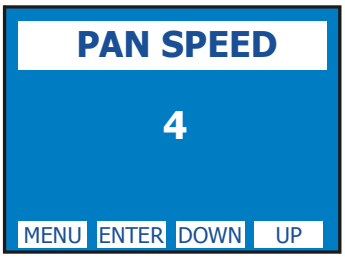
☞ Menu ☞ Up-Down Tilt Direction ☞ ENTER ☞ Up-Down

TILT DIRECTION
This menu allows to set the Tilt movement Normal or Reverse

Tilt movement Normal or Reverse Default = Normal ☞ ENTER

☞ Menu ☞ Up-Down Pan Speed ☞ ENTER ☞ Up-Down

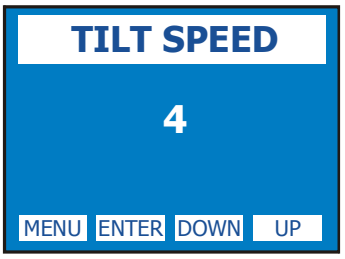
PAN SPEED
Pan Speed control (1-8)



Pan Speed control (1-8) Default = 4 ☞ ENTER

☞ Menu ☞ Up-Down Tilt Speed ☞ ENTER ☞ Up-Down

TILT SPEED
Tilt Speed control (1-8)



Tilt Speed control (1-8) Default = 8 ☞ ENTER

12- DISPLAY FUNCTIONS

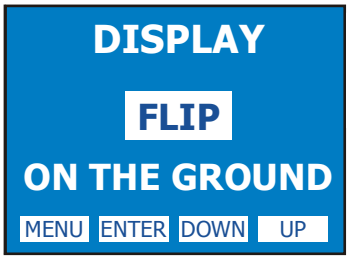
Menu Up-Down Display ENTER Up-Down

DISPLAY FLIP / STAND BY / CONTRAST

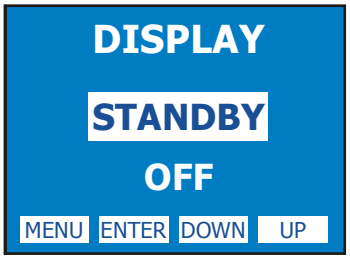
Display Flip:
Reverses display's reading depending on the mounting position
(on the ground or suspended).

Display Standby:
To turn off the display (after 5 seconds) or leave it always on.

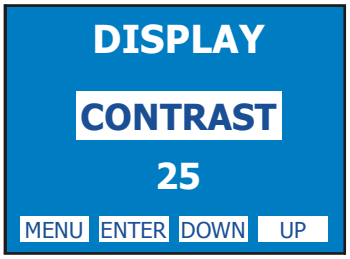
Display Contrast:
Display contrast regulation (1-40)



Display Flip
ON THE GROUND (Default)
SUSPENDED
ENTER



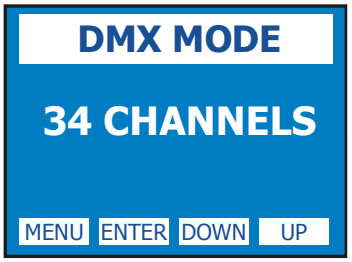
Display Standby
OFF = Display Standby disabled (Default)
ON = Display goes OFF after 5 seconds
ENTER



Display Contrast
1-40 (Default = 25)
ENTER

Menu Up-Down DMX Mode ENTER Up-Down

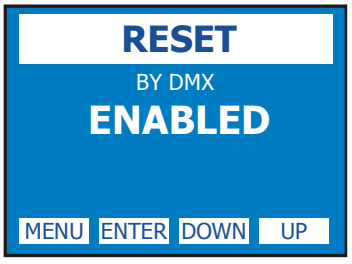
DMX MODE
To select DMX mode:
34 channels (Default) or 38 channels



DMX Mode
34 channels (Default)
38 channels
ENTER

Menu Up-Down Reset ENTER Up-Down

RESET
Reset via DMX ENABLED / DISABLED and unit motors reset

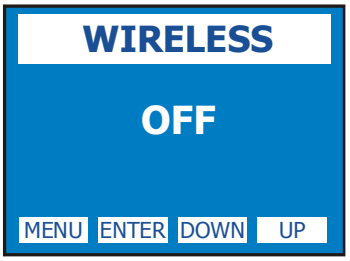


ENABLED = Reset via DMX enabled (Default)
DISABLED = Reset via DMX disabled
NOW = Unit motors reset
ENTER

Menu Up-Down Wireless ENTER Up-Down

WIRELESS
Wireless DMX enabled / disabled.

(Wireless module on request)



ON = Enabled
OFF = Disabled (Default)
UNLINK = Log out

(Wireless module on request)
ENTER

12- DISPLAY FUNCTIONS

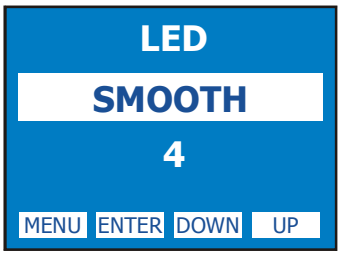
Menu Up-Down LED ENTER Up-Down

SMOOTH: This menu allows to select the value of the delay (in milliseconds) for RGBW and Dimmer channels reaction to DMX or program variation.
4 = 25 ms delay (fast response)
20 = 250 ms delay (slow response)

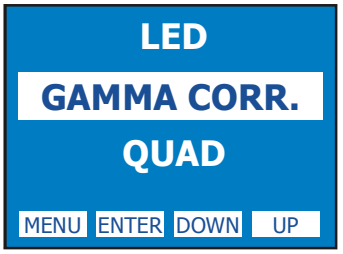
GAMMA CORRECTION
This menu allows to select between Linear current output or Quadratic current output for LEDs.

OUTPUT FREQUENCY
This menu allows to adjust the PWM frequency value (Hz) in order to reduce flickering in the process of your camera recordings.

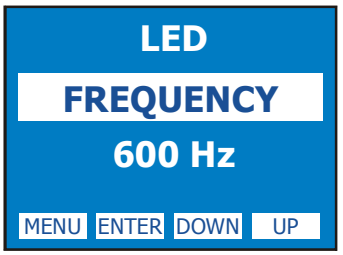
BOOST
This menu allows to increase the LEDs current from 800mA to 1000mA.



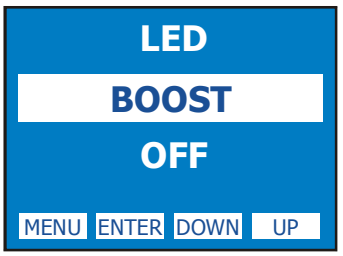
SMOOTH VALUE ENTER
Range = 0 – 20
Default = 4



GAMMA CORRECTION
LINE = Linear current output
QUAD = Quadratic light output (Default)

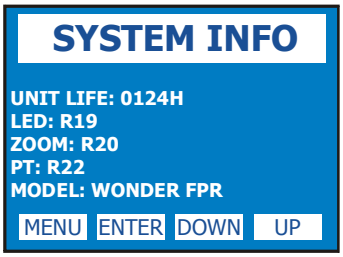


OUTPUT FREQUENCY
Range: 600 Hz – 10 KHz
Default = 600 Hz



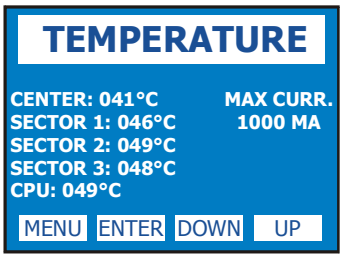
BOOST
OFF = 800mA (Default)
ON = 1000mA

Menu Up-Down System Info ENTER Up-Down



SYSTEM INFO ENTER
Unit life time; LED Driver, Zoom and Pan&Tilt cards software version and unit model

Menu Up-Down Temperature ENTER Up-Down

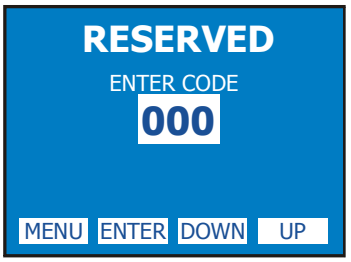


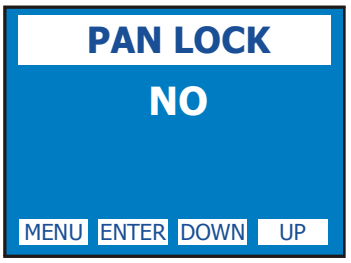
4 LEDs panels + CPU card temperature and LEDs max current value ENTER

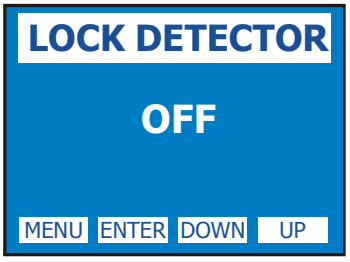
12- DISPLAY FUNCTIONS

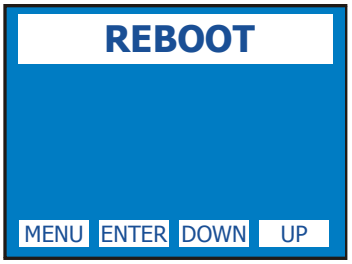
Menu Up-Down Reserved ENTER Up-Down

RESERVED
(Code = 100)
Pan lock-Tilt lock
Pan free-Tilt free
Lock Detector
Reboot
Exit To Main









ENTER

Pan Lock = Lock the Pan to the desired value
Tilt Lock = Lock the Tilt to the desired value
Pan Free = Remove power to Pan motor
Tilt Free = Remove power to Tilt motor

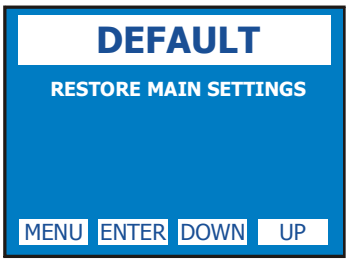
Lock Detector OFF = Default
Lock Detector ON: This function lets the user to activate the Lock detector on Pan and Tilt. When Lock detector is set to ON, the unit start the Pan&Tilt motors reset normally, but if for any reason there is something blocking the movement for Pan&Tilt motors during the initial reset (example unit into the fly case and power connected), it automatically will stop to reset Pan&Tilt motors after 5 seconds from the startup and a warning message (Pan locked-Tilt locked) will appear on unit display.

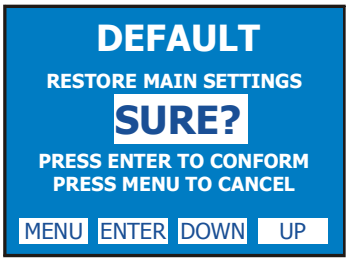
Reboot = Unit Reboot without needing of turning OFF the unit

Exit To Main = Exit from Reserved menu

Menu Up-Down Default ENTER Up-Down

DEFAULT
To restore main settings





Default
To restore main settings

ENTER

13- PERIODIC CLEANING

13.1- Front lenses screen glass

The dust can reduce the luminous output substantially.
Regularly clean the front lenses screen glass using a soft cotton cloth, dampened with a specialist lens cleaning solution.

13.2- Fans and air passages

The fans and air passages must be cleaned approximately every 6 weeks.
This periodic cleaning will depend of course, on the conditions in which the projector is operating.
Suitable instruments for performing this type of maintenance are a brush and a common vacuum cleaner or an air compressor.
If necessary, clean the fans and air passages more frequently.

14- PERIODIC CONTROLS

Mechanical parts

Periodically check all mechanical parts, replacing them if necessary.

Electrical components

Check all electrical components for correct earthing and proper connection of all connectors, refastening if necessary.

Fuse replacement

Locate the fuse, which protects the electronics, in the base of the WONDER. Using a multimeter, test the condition of the fuse, replacing it with one of equivalent type (10AT) if necessary.

15- DMX PROTOCOL

34 CHANNELS MODE

1 PAN msb
2 PAN lsb
3 TILT msb
4 TILT lsb
5 SPEED MOVEMENT
6 PAN FPR
7 SHUTTER
8 DIMMER
9 RED CENTER
10 GREEN CENTER
11 BLUE CENTER
12 WHITE CENTER
13 RED SECTOR 1
14 GREEN SECTOR 1
15 BLUE SECTOR 1
16 WHITE SECTOR 1
17 RED SECTOR 2
18 GREEN SECTOR 2
19 BLUE SECTOR 2
20 WHITE SECTOR 2
21 RED SECTOR 3
22 GREEN SECTOR 3
23 BLUE SECTOR 3
24 WHITE SECTOR 3
25 WHITE PRE-PROGRAMMED
26 CTC
27 MACROS
28 MACROS SPEED CONTROL
29 FUNCTIONS
30 ZOOM CENTRE / GLOBAL ZOOM
31 ZOOM SECTORS
32 ZOOM MODE
33 SERVICE
34 RESET

DMX CHANNEL	1	Parameter: **PAN msb**
DMX CHANNEL	2	Parameter: **PAN lsb**

DMX CHANNEL	3	Parameter: **TILT msb**
DMX CHANNEL	4	Parameter: **TILT lsb**

DMX CHANNEL	5	Parameter: **SPEED MOVEMENT**

DMX value	Function
000-010	Standard
011-025	Fast movement
026-127	Vector mode from fast to slow
128-247	Variable time reaction to dmx signal (fast to slow)
248-255	Silent movement

DMX CHANNEL	6	Parameter: **PAN FPR**
DMX value	**Function**	
000-010	Position mode 540° (standard path)	
011-020	Position mode 360° (1 turn)	
021-030	Position mode 720° (2 turns)	
031-040	Position mode 1080° (3 turns)	
041-050	Position mode 1440° (4 turns)	
051-060	Position mode 1800° (5 turns)	
061-070	Position mode 2160° (6 turns)	
071-080	Position mode 2520° (7 turns)	
081-090	Position mode 2880° (8 turns)	
091-100	Position mode 3240° (9 turns)	
101-110	Position mode 3600° (10 turns)	
111-120	Position mode 360° smart path	
121-182	Forward spin rotation speed from max to min	
183-193	Stop	
194-255	Reverse spin rotation speed from min to max	

DMX CHANNEL	7	Parameter: **SHUTTER**
DMX value	**Function**	
000-009	Black-out	
010-019	Open	
020-029	Black-out	
030-034	Strobe speed 1 (1 flash/sec)	
035-039	Strobe speed 2 (2 flash/sec)	
040-044	Strobe speed 3 (3 flash/sec)	
045-049	Strobe speed 4 (4 flash/sec)	
050-054	Strobe speed 5 (5 flash/sec)	
055-059	Strobe speed 6 (6 flash/sec)	
060-064	Strobe speed 7 (7 flash/sec)	
065-069	Strobe speed 8 (8 flash/sec)	
070-074	Strobe speed 9 (10 flash/sec)	
075-079	Strobe speed 10 (12 flash/sec)	
080-084	Strobe speed 11 (14 flash/sec)	
085-089	Strobe speed 12 (16 flash/sec)	
090-094	Strobe speed 13 (18 flash/sec)	
095-099	Strobe speed 14 (20 flash/sec)	
100-104	Strobe speed 15 (22 flash/sec)	
105-109	Strobe speed 16 (25 flash/sec)	
110-114	Strobe speed 17 (30 flash/sec)	
115-119	Strobe speed 18 (35 flash/sec)	
120-149	Pulse UP (42.6 s – 120 ms)	
150-179	Pulse DOWN (42.6 s – 120 ms)	
180-191	Random strobe effect from slow to fast (all zones together) **Dimmer, Red, Green, Blue, White channels active**	
192-203	Full independent random strobe effect from slow to fast (all zones together) **Dimmer, Red, Green, Blue, White channels disabled**	
204-215	Random strobe effect from slow to fast (random zones)	
216-229	Random strobe effect from slow to fast (random zone + random strobe)	
230-255	Open	

DMX CHANNEL	8	Parameter: **DIMMER**
DMX value	**Function**	
000-007	Black-out	
008-255	Proportional dimmer	

DMX CHANNEL	9	Parameter: **RED CENTRE**
DMX CHANNEL	10	Parameter: **GREEN CENTRE**
DMX CHANNEL	11	Parameter: **BLUE CENTRE**
DMX CHANNEL	12	Parameter: **WHITE CENTRE**
DMX CHANNEL	13	Parameter: **RED SECTOR 1**
DMX CHANNEL	14	Parameter: **GREEN SECTOR 1**
DMX CHANNEL	15	Parameter: **BLUE SECTOR 1**
DMX CHANNEL	16	Parameter: **WHITE SECTOR 1**
DMX CHANNEL	17	Parameter: **RED SECTOR 2**
DMX CHANNEL	18	Parameter: **GREEN SECTOR 2**
DMX CHANNEL	19	Parameter: **BLUE SECTOR 2**
DMX CHANNEL	20	Parameter: **WHITE SECTOR 2**
DMX CHANNEL	21	Parameter: **RED SECTOR 3**
DMX CHANNEL	22	Parameter: **GREEN SECTOR 3**
DMX CHANNEL	23	Parameter: **BLUE SECTOR 3**
DMX CHANNEL	24	Parameter: **WHITE SECTOR 3**

DMX value	**Function**
000-255	Proportional colour

DMX CHANNEL	25	Parameter: **WHITE PRE-PROGRAMMED**

DMX value	**Function**
000-055	No function
056-105	Full (red-green-blue at full)
106-155	White DTS
156-205	Custom white create (RGB levels selectable by DMX)
206-255	White CTC (channel 26 CTC enabled)

DMX CHANNEL	26	Parameter: **CTC (Colour temperature correction)**

IF CHANNEL 25 WHITE PRE-PROGRAMMED = WHITE CTC (DMX range value 206-255)

DMX value	**Function**
000-255	Linear control temperature correction (from 2700°K to 8000°K)

DMX CHANNEL	27	Parameter: **MACROS**

DMX value	Function
000-014	No function
015-024	Macro 1 (static)
025-034	Macro 2 (static)
035-044	Macro 3 (static)
045-054	Macro 4 (static)
055-064	Macro 5 (static)
065-074	Macro 6 (static)
075-084	Macro 7 (static)
085-094	Macro 8 (static)
095-104	Macro 9 (static)
105-114	Macro 10 (static)
115-124	Macro 11 (static)
125-134	Macro 12 (static)
135-144	Macro 13 (static)
145-154	Macro 14 (static)
155-164	Macro 15 (static)
165-174	Macro 16 (static)
175-184	Rainbow effect (speed by channel 28)
185-189	All sectors dynamic effect 1 (speed by channel 28)
190-194	All sectors dynamic effect 2 (speed by channel 28)
195-199	All sectors dynamic effect 3 (speed by channel 28)
200-204	All sectors dynamic effect 4 (speed by channel 28)
205-209	All sectors dynamic effect 5 (speed by channel 28)
210-214	All sectors dynamic effect 6 (speed by channel 28)
215-219	All sectors dynamic effect 7 (speed by channel 28)
220-224	All sectors dynamic effect 8 (speed by channel 28)
225-229	All sectors dynamic effect 9 (speed by channel 28)
230-234	All sectors dynamic effect 10 (speed by channel 28)
235-239	All sectors dynamic effect 11 EMPTY (speed by channel 28)
240-244	All sectors dynamic effect 12 EMPTY (speed by channel 28)
245-249	All sectors dynamic effect 13 (speed by channel 28)
250-255	All sectors dynamic effect 14 (speed by channel 28)

DMX CHANNEL	28	Parameter: **MACROS SPEED CONTROL**

Active only if MACROS channel 27 between DMX values 175-255

DMX value	Function	
	Rainbow effect CH27 from 175 to 184	**Dynamic Effect** CH27 from 185 to 255
000-014	Rainbow effect Speed 1 (4 sec)	Dynamic Effect Speed 1 (0,1 sec)
015-029	Rainbow effect Speed 2 (6 sec)	Dynamic Effect Speed 2 (0,2 sec)
030-044	Rainbow effect Speed 3 (8 sec)	Dynamic Effect Speed 3 (0,3 sec)
045-059	Rainbow effect Speed 4 (10 sec)	Dynamic Effect Speed 4 (0,4 sec)
060-074	Rainbow effect Speed 5 (15 sec)	Dynamic Effect Speed 5 (0,5 sec)
075-089	Rainbow effect Speed 6 (20 sec)	Dynamic Effect Speed 6 (0,6 sec)
090-104	Rainbow effect Speed 7 (30 sec)	Dynamic Effect Speed 7 (0,8 sec)
105-119	Rainbow effect Speed 8 (45 sec)	Dynamic Effect Speed 8 (1 sec)
120-134	Rainbow effect Speed 9 (60 sec)	Dynamic Effect Speed 9 (1,5 sec)
135-149	Rainbow effect Speed 10 (90 sec)	Dynamic Effect Speed 10 (2 sec)
150-164	Rainbow effect Speed 11 (120 sec)	Dynamic Effect Speed 11 (3 sec)
165-179	Rainbow effect Speed 12 (150 sec)	Dynamic Effect Speed 12 (5 sec)
180-194	Rainbow effect Speed 13 (180 sec)	Dynamic Effect Speed 13 (7 sec)
195-209	Rainbow effect Speed 14 (210 sec)	Dynamic Effect Speed 14 (10 sec)
210-224	Rainbow effect Speed 15 (240 sec)	Dynamic Effect Speed 15 (15 sec)
225-239	Rainbow effect Speed 16 (270 sec)	Dynamic Effect Speed 16 (25 sec)
240-255	Rainbow effect Speed 17 (300 sec)	Dynamic Effect Speed 17 (30 sec)

DMX CHANNEL	29	Parameter: **FUNCTIONS (Recall, Create, Store custom white)**

IF CHANNEL 25 WHITE PRE-PROGRAMMED = CUSTOM WHITE (DMX range value 156-205)

DMX value	Function
000-079	Custom White Recall
080-160	Custom White Create (Enable custom white creation)
161-255	Custom White Store (Store the custom white created)

DMX CHANNEL	30	Parameter: **ZOOM CENTRE**

IF CHANNEL 32 ZOOM MODE = INDEPENDENT ZOOM CONTROL (DMX range value 000-127)

DMX value	Function
000-255	ZOOM CENTRE Linear control from narrow to wide (3,5° - 52°)

IF CHANNEL 32 ZOOM MODE = GLOBAL ZOOM CONTROL (DMX range value 128-255)

DMX value	Function
000-255	GLOBAL ZOOM (Zoom centre + Zoom sectors) Linear control from narrow to wide (8° - 52°)

DMX CHANNEL	31	Parameter: **ZOOM SECTORS**

IF CHANNEL 32 ZOOM MODE = INDEPENDENT ZOOM CONTROL (DMX range value 000-127)

DMX value	Function
000-255	ZOOM SECTORS Linear control from narrow to wide (8° - 52°)

IF CHANNEL 32 ZOOM MODE = GLOBAL ZOOM CONTROL (DMX range value 128-255)

DMX value	Function
000-255	No function

DMX CHANNEL	32	Parameter: **ZOOM MODE**

DMX value	Function
000-127	Independent Zoom control: Zoom centre ch30 and Zoom sectors ch31 enabled
128-255	Global Zoom control on ch30 enabled; Zoom sectors ch31 disabled

DMX CHANNEL	33	Parameter: **SERVICE**

To activate following functions, stop in DMX value for at least 5 seconds.
FUNCTION channel ch29 must be at range 161-255.
WHITE PRE-PROGRAMMED channel ch25 must be at range 000-055.
Corresponding DISPLAY MENU settings, will be overwritten.

DMX value	Function
000-014	No Function
015-024	SMOOTH OFF
025-034	SMOOTH 4
035-044	SMOOTH 8
045-054	SMOOTH 15
055-064	SMOOTH 20
065-074	GAMMA CORRECTION QUADRATIC
075-084	GAMMA CORRECTION LINEAR
085-094	OUTPUT FREQUENCY 610 Hz
095-104	OUTPUT FREQUENCY 1500 Hz
105-114	OUTPUT FREQUENCY 3000 Hz
115-124	OUTPUT FREQUENCY 6000 Hz
125-134	OUTPUT FREQUENCY 9000 Hz
135-144	BOOST ON
145-154	BOOST OFF
155-164	WIRELESS ON
165-174	WIRELESS UNLINK
175-184	WIRELESS OFF
185-194	PAN NORMAL
195-204	PAN REVERSE
205-214	TILT NORMAL
215-224	TILT REVERSE
225-234	RESERVED
235-244	Fans Speed Studio Mode (not yet implemented)
245-255	Fans Speed Live Mode (not yet implemented)

DMX CHANNEL	34	Parameter: **RESET**

DMX value	Function
000-015	No Function
016-075	PAN-TILT reset
076-135	ZOOM CENTRE reset
136-200	ZOOM SECTORS reset
201-239	ZOOM CENTRE + ZOOM SECTORS reset
240-255	TOTAL reset

15- DMX PROTOCOL

38 CHANNELS MODE

1 PAN msb
2 PAN lsb
3 TILT msb
4 TILT lsb
5 SPEED MOVEMENT
6 PAN FPR
7 SHUTTER
8 DIMMER
9 RED CENTER
10 GREEN CENTER
11 BLUE CENTER
12 WHITE CENTER
13 RED SECTOR 1
14 GREEN SECTOR 1
15 BLUE SECTOR 1
16 WHITE SECTOR 1
17 RED SECTOR 2
18 GREEN SECTOR 2
19 BLUE SECTOR 2
20 WHITE SECTOR 2
21 RED SECTOR 3
22 GREEN SECTOR 3
23 BLUE SECTOR 3
24 WHITE SECTOR 3
25 WHITE PRE-PROGRAMMED
26 CTC
27 MACROS
28 MACROS SPEED CONTROL
29 FUNCTIONS
30 ZOOM CENTRE / GLOBAL ZOOM
31 ZOOM SECTORS
32 ZOOM MODE
33 SERVICE
34 RESET
35 SHUTTER CENTRE
36 SHUTTER SECTOR 1
37 SHUTTER SECTOR 2
38 SHUTTER SECTOR 3

DMX CHANNEL	1	Parameter: **PAN msb**
DMX CHANNEL	2	Parameter: **PAN lsb**

DMX CHANNEL	3	Parameter: **TILT msb**
DMX CHANNEL	4	Parameter: **TILT lsb**

DMX CHANNEL	5	Parameter: **SPEED MOVEMENT**
DMX value	**Function**	
000-010	Standard	
011-025	Fast movement	
026-127	Vector mode from fast to slow	
128-247	Variable time reaction to dmx signal (fast to slow)	
248-255	Silent movement	

DMX CHANNEL	6	Parameter: **PAN FPR**
DMX value	**Function**	
000-010	Position mode 540° (standard path)	
011-020	Position mode 360° (1 turn)	
021-030	Position mode 720° (2 turns)	
031-040	Position mode 1080° (3 turns)	
041-050	Position mode 1440° (4 turns)	
051-060	Position mode 1800° (5 turns)	
061-070	Position mode 2160° (6 turns)	
071-080	Position mode 2520° (7 turns)	
081-090	Position mode 2880° (8 turns)	
091-100	Position mode 3240° (9 turns)	
101-110	Position mode 3600° (10 turns)	
111-120	Position mode 360° smart path	
121-182	Forward spin rotation speed from max to min	
183-193	Stop	
194-255	Reverse spin rotation speed from min to max	

DMX CHANNEL	7	Parameter: **SHUTTER**
DMX value	**Function**	
000-009	Black-out	
010-019	Open	
020-029	Black-out	
030-034	Strobe speed 1 (1 flash/sec)	
035-039	Strobe speed 2 (2 flash/sec)	
040-044	Strobe speed 3 (3 flash/sec)	
045-049	Strobe speed 4 (4 flash/sec)	
050-054	Strobe speed 5 (5 flash/sec)	
055-059	Strobe speed 6 (6 flash/sec)	
060-064	Strobe speed 7 (7 flash/sec)	
065-069	Strobe speed 8 (8 flash/sec)	
070-074	Strobe speed 9 (10 flash/sec)	
075-079	Strobe speed 10 (12 flash/sec)	
080-084	Strobe speed 11 (14 flash/sec)	
085-089	Strobe speed 12 (16 flash/sec)	
090-094	Strobe speed 13 (18 flash/sec)	
095-099	Strobe speed 14 (20 flash/sec)	
100-104	Strobe speed 15 (22 flash/sec)	
105-109	Strobe speed 16 (25 flash/sec)	
110-114	Strobe speed 17 (30 flash/sec)	
115-119	Strobe speed 18 (35 flash/sec)	
120-149	Pulse UP (42.6 s – 120 ms)	
150-179	Pulse DOWN (42.6 s – 120 ms)	
180-191	Random strobe effect from slow to fast (all zones together) **Dimmer, Red, Green, Blue, White channels active**	
192-203	Full independent random strobe effect from slow to fast (all zones together) **Dimmer, Red, Green, Blue, White channels disabled**	
204-215	Random strobe effect from slow to fast (random zones)	
216-229	Random strobe effect from slow to fast (random zones + random strobe)	
230-255	Open	

DMX CHANNEL	8	Parameter: **DIMMER**
DMX value	**Function**	
000-007	Black-out	
008-255	Proportional dimmer	

DMX CHANNEL	9	Parameter: **RED CENTRE**
DMX CHANNEL	10	Parameter: **GREEN CENTRE**
DMX CHANNEL	11	Parameter: **BLUE CENTRE**
DMX CHANNEL	12	Parameter: **WHITE CENTRE**
DMX CHANNEL	13	Parameter: **RED SECTOR 1**
DMX CHANNEL	14	Parameter: **GREEN SECTOR 1**
DMX CHANNEL	15	Parameter: **BLUE SECTOR 1**
DMX CHANNEL	16	Parameter: **WHITE SECTOR 1**
DMX CHANNEL	17	Parameter: **RED SECTOR 2**
DMX CHANNEL	18	Parameter: **GREEN SECTOR 2**
DMX CHANNEL	19	Parameter: **BLUE SECTOR 2**
DMX CHANNEL	20	Parameter: **WHITE SECTOR 2**
DMX CHANNEL	21	Parameter: **RED SECTOR 3**
DMX CHANNEL	22	Parameter: **GREEN SECTOR 3**
DMX CHANNEL	23	Parameter: **BLUE SECTOR 3**
DMX CHANNEL	24	Parameter: **WHITE SECTOR 3**
DMX value	**Function**	
000-255	Proportional colour	

DMX CHANNEL	25	Parameter: **WHITE PRE-PROGRAMMED**
DMX value	**Function**	
000-055	No function	
056-105	Full (red-green-blue at full)	
106-155	White DTS	
156-205	Custom white create (RGB levels selectable by DMX)	
206-255	White CTC (channel 26 CTC enabled)	

DMX CHANNEL	26	Parameter: **CTC (Colour temperature correction)**

IF CHANNEL 25 WHITE PRE-PROGRAMMED = WHITE CTC (DMX range value 206-255)

DMX value	**Function**
000-255	Linear control temperature correction (from 2700°K to 8000°K)

DMX CHANNEL	27	Parameter: **MACROS**

DMX value	Function
000-014	No function
015-024	Macro 1 (static)
025-034	Macro 2 (static)
035-044	Macro 3 (static)
045-054	Macro 4 (static)
055-064	Macro 5 (static)
065-074	Macro 6 (static)
075-084	Macro 7 (static)
085-094	Macro 8 (static)
095-104	Macro 9 (static)
105-114	Macro 10 (static)
115-124	Macro 11 (static)
125-134	Macro 12 (static)
135-144	Macro 13 (static)
145-154	Macro 14 (static)
155-164	Macro 15 (static)
165-174	Macro 16 (static)
175-184	Rainbow effect (speed by channel 28)
185-189	All sectors dynamic effect 1 (speed by channel 28)
190-194	All sectors dynamic effect 2 (speed by channel 28)
195-199	All sectors dynamic effect 3 (speed by channel 28)
200-204	All sectors dynamic effect 4 (speed by channel 28)
205-209	All sectors dynamic effect 5 (speed by channel 28)
210-214	All sectors dynamic effect 6 (speed by channel 28)
215-219	All sectors dynamic effect 7 (speed by channel 28)
220-224	All sectors dynamic effect 8 (speed by channel 28)
225-229	All sectors dynamic effect 9 (speed by channel 28)
230-234	All sectors dynamic effect 10 (speed by channel 28)
235-239	All sectors dynamic effect 11 EMPTY (speed by channel 28)
240-244	All sectors dynamic effect 12 EMPTY (speed by channel 28)
245-249	All sectors dynamic effect 13 (speed by channel 28)
250-255	All sectors dynamic effect 14 (speed by channel 28)

DMX CHANNEL	28	Parameter: **MACROS SPEED CONTROL**

Active only if MACROS channel 27 between DMX values 175-255

DMX value	Function	
	Rainbow effect CH27 from 175 to 184	**Dynamic Effect** CH27 from 185 to 255
000-014	Rainbow effect Speed 1 (4 sec)	Dynamic Effect Speed 1 (0,1 sec)
015-029	Rainbow effect Speed 2 (6 sec)	Dynamic Effect Speed 2 (0,2 sec)
030-044	Rainbow effect Speed 3 (8 sec)	Dynamic Effect Speed 3 (0,3 sec)
045-059	Rainbow effect Speed 4 (10 sec)	Dynamic Effect Speed 4 (0,4 sec)
060-074	Rainbow effect Speed 5 (15 sec)	Dynamic Effect Speed 5 (0,5 sec)
075-089	Rainbow effect Speed 6 (20 sec)	Dynamic Effect Speed 6 (0,6 sec)
090-104	Rainbow effect Speed 7 (30 sec)	Dynamic Effect Speed 7 (0,8 sec)
105-119	Rainbow effect Speed 8 (45 sec)	Dynamic Effect Speed 8 (1 sec)
120-134	Rainbow effect Speed 9 (60 sec)	Dynamic Effect Speed 9 (1,5 sec)
135-149	Rainbow effect Speed 10 (90 sec)	Dynamic Effect Speed 10 (2 sec)
150-164	Rainbow effect Speed 11 (120 sec)	Dynamic Effect Speed 11 (3 sec)
165-179	Rainbow effect Speed 12 (150 sec)	Dynamic Effect Speed 12 (5 sec)
180-194	Rainbow effect Speed 13 (180 sec)	Dynamic Effect Speed 13 (7 sec)
195-209	Rainbow effect Speed 14 (210 sec)	Dynamic Effect Speed 14 (10 sec)
210-224	Rainbow effect Speed 15 (240 sec)	Dynamic Effect Speed 15 (15 sec)
225-239	Rainbow effect Speed 16 (270 sec)	Dynamic Effect Speed 16 (25 sec)
240-255	Rainbow effect Speed 17 (300 sec)	Dynamic Effect Speed 17 (30 sec)

DMX CHANNEL	29	Parameter: **FUNCTIONS (Recall, Create, Store custom white)**

IF CHANNEL 25 WHITE PRE-PROGRAMMED = CUSTOM WHITE (DMX range value 156-205)

DMX value	Function
000-079	Custom White Recall
080-160	Custom White Create (Enable custom white creation)
161-255	Custom White Store (Store the custom white created)

DMX CHANNEL	30	Parameter: **ZOOM CENTRE**

IF CHANNEL 32 ZOOM MODE = INDEPENDENT ZOOM CONTROL (DMX range value 000-127)

DMX value	Function
000-255	ZOOM CENTRE Linear control from narrow to wide (3,5° - 52°)

IF CHANNEL 32 ZOOM MODE = GLOBAL ZOOM CONTROL (DMX range value 128-255)

DMX value	Function
000-255	GLOBAL ZOOM (Zoom centre + Zoom sectors) Linear control from narrow to wide (8° - 52°)

DMX CHANNEL	31	Parameter: **ZOOM SECTORS**

IF CHANNEL 32 ZOOM MODE = INDEPENDENT ZOOM CONTROL (DMX range value 000-127)

DMX value	Function
000-255	ZOOM SECTORS Linear control from narrow to wide (8° - 52°)

IF CHANNEL 32 ZOOM MODE = GLOBAL ZOOM CONTROL (DMX range value 128-255)

DMX value	Function
000-255	No function

DMX CHANNEL	32	Parameter: **ZOOM MODE**

DMX value	Function
000-127	Independent Zoom control: Zoom centre ch30 and Zoom sectors ch31 enabled
128-255	Global Zoom control on ch30 enabled; Zoom sectors ch31 disabled

DMX CHANNEL	33	Parameter: **SERVICE**

To activate following functions, stop in DMX value for at least 5 seconds.
FUNCTION channel ch29 must be at range 161-255.
WHITE PRE-PROGRAMMED channel ch25 must be at range 000-055.
Corresponding DISPLAY MENU settings, will be overwritten.

DMX value	Function
000-014	No Function
015-024	SMOOTH OFF
025-034	SMOOTH 4
035-044	SMOOTH 8
045-054	SMOOTH 15
055-064	SMOOTH 20
065-074	GAMMA CORRECTION QUADRATIC
075-084	GAMMA CORRECTION LINEAR
085-094	OUTPUT FREQUENCY 610 Hz
095-104	OUTPUT FREQUENCY 1500 Hz
105-114	OUTPUT FREQUENCY 3000 Hz
115-124	OUTPUT FREQUENCY 6000 Hz
125-134	OUTPUT FREQUENCY 9000 Hz
135-144	BOOST ON
145-154	BOOST OFF
155-164	WIRELESS ON
165-174	WIRELESS UNLINK
175-184	WIRELESS OFF
185-194	PAN NORMAL
195-204	PAN REVERSE
205-214	TILT NORMAL
215-224	TILT REVERSE
225-234	RESERVED
235-244	Fans Speed Studio Mode(not yet implemented)
245-255	Fans Speed Live Mode (not yet implemented)

DMX CHANNEL	34	Parameter: **RESET**
DMX value	**Function**	
000-015	No Function	
016-075	PAN-TILT reset	
076-135	ZOOM CENTRE reset	
136-200	ZOOM SECTORS reset	
201-239	ZOOM CENTRE + ZOOM SECTORS reset	
240-255	TOTAL reset	

DMX CHANNEL	35 36 37 38	Parameter: **SHUTTER CENTRE** Parameter: **SHUTTER SECTOR 1** Parameter: **SHUTTER SECTOR 2** Parameter: **SHUTTER SECTOR 3**
DMX value	**Function**	
000-009	Black-out	
010-019	Open	
020-029	Black-out	
030-034	Strobe speed 1 (1 flash/sec)	
035-039	Strobe speed 2 (2 flash/sec)	
040-044	Strobe speed 3 (3 flash/sec)	
045-049	Strobe speed 4 (4 flash/sec)	
050-054	Strobe speed 5 (5 flash/sec)	
055-059	Strobe speed 6 (6 flash/sec)	
060-064	Strobe speed 7 (7 flash/sec)	
065-069	Strobe speed 8 (8 flash/sec)	
070-074	Strobe speed 9 (10 flash/sec)	
075-079	Strobe speed 10 (12 flash/sec)	
080-084	Strobe speed 11 (14 flash/sec)	
085-089	Strobe speed 12 (16 flash/sec)	
090-094	Strobe speed 13 (18 flash/sec)	
095-099	Strobe speed 14 (20 flash/sec)	
100-104	Strobe speed 15 (22 flash/sec)	
105-109	Strobe speed 16 (25 flash/sec)	
110-114	Strobe speed 17 (30 flash/sec)	
115-119	Strobe speed 18 (35 flash/sec)	
120-179	Black-out	
180-191	Random strobe	
192-229	Black-out	
230-255	Open	

NOTES

MADE IN ITALY CE

DTS

The Lighting Company

ISO 9001:2008
D.T.S. quality system
is certified to the
ISO 9001:2008 standard

PROUDLY MADE IN ITALY

D.T.S. products are designed
and manufactured at the D.T.S.
plants in italy

0517I216

D.T.S. Illuminazione s.r.l. – Via Fagnano Selve 10-12-14 47843
Misano Adriatico (RN) Italia
Tel.: +39 0541 611131. Fax + 39 0541 611111
info@dts-lighting.it www.dts-lighting.it